

WHAT IS CLAIMED IS:

Sub  
B1

1. A method of killing a tumor greater than 1 mm in size in an individual in need of such treatment, comprising the step of:

administering to said individual a pharmacologically effective dose of a construct comprising an alpha emitting isotope.

2. The method of claim 1, wherein said construct is selected from the group consisting of an antibody, an antibody fragment, a cytokine and a receptor ligand.

3. The method of claim 1, wherein said alpha emitting isotope is selected from the group consisting of Bismuth-213, Bismuth-212, actinium-225, radium-223, lead-212, terbium-149, fermium-155 and Astatine-211.

*Sub B2*  
4. The method of claim 3, wherein said alpha emitting isotope has a specific activity of from about 0.05 mCi/mg to about 100 mCi/mg.

5 5. The method of claim 3, wherein said alpha emitting isotope is administered in a dose adequate to deliver a minimum of 1 alpha track per cell.

10 6. The method of claim 1, wherein said construct is multiply administered.

*Sub B3*  
15 7. The method of claim 1, wherein said dose is from about 0.1 mg/m<sup>2</sup> to about 50 mg/m<sup>2</sup>.

8. A method of killing a non-malignant cell in an individual in need of such treatment, comprising the step of:

20 administering to said individual a pharmacologically effective dose of a construct comprising an alpha emitting isotope.

9. The method of claim 8, wherein said cell is selected from the group consisting of a virus infected cell, an autoimmune cell, a lymphoid cell, a normal bone marrow cell and an abnormally  
5 proliferating normal cell.

10. The method of claim 9, wherein said individual has a disease selected from the group consisting of a non-malignant  
10 neoplastic disease, a viral infection, an autoimmune disease, prostatic hypertrophy, coronary disease and a vascular occlusive disease.

11. The method of claim 9, wherein construct is selected from the group consisting of an antibody, an antibody  
15 fragment, a cytokine and a receptor ligand.

12. The method of claim 8, wherein said alpha emitting  
20 isotope is selected from the group consisting of Bismuth-213,

Bismuth-212, actinium-225, radium-223, lead-212, terbium-149, fermium-155 and Astatine-211.

5           13. The method of claim 12, wherein said alpha emitting isotope has a specific activity of from about 0.1 mci/mg to about 100 mci/mg.

10           14. The method of claim 12, wherein said alpha emitting isotope is administered in a dose adequate to deliver a minimum of 1 alpha track per cell.

15           15. The method of claim 8, wherein said construct is administered in a dose of from about 0.1 mg/m<sup>2</sup> to about 50 mg/m<sup>2</sup>.

16. A method of killing a tumor by targeting antigens in the tumor vasculature in an individual in need of such treatment, comprising the step of:

administering to said individual a pharmacologically  
5 effective dose of a construct comprising an alpha emitting isotope effective to inhibit the function of said tumor vasculature.

17. The method of claim 16, wherein said construct is  
10 selected from the group consisting of an antibody, a antibody fragment, a cytokine, a peptide and a receptor ligand.

18. The method of claim 16, wherein said alpha  
15 emitting isotope is selected from the group consisting of Bismuth-213, Bismuth-212, actinium-225, radium-223, lead-212, turbium-149, fermium-155 and Astatine-211.

19. The method of claim 18, wherein said alpha emitting isotope has a specific activity of from about 0.1 mCi/mg to about 100 mCi/mg.

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20. The method of claim 18, wherein said alpha emitting isotope is administered in a dose adequate to deliver a minimum of 1 alpha track per cell.

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21. The method of claim 16, wherein said construct is multiply administered.

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22. The method of claim 16, wherein said dose is from about 0.1 mg/m<sup>2</sup> to about 50 mg/m<sup>2</sup>.